

REMARKS

The Office Action dated October 18, 2004 has been received and reviewed by the applicant. Claims 1-18 are in the application. Claims 1-18 stand rejected. Reconsideration is respectfully requested.

Claims 1-2, 8-11, and 17-18 stand rejected under 35 U.S.C. 102(e) as being anticipated by Maes et al. (hereinafter, "Maes") (U.S. 6,625,298). It is respectfully requested that the rejection be withdrawn for the following reasons.

For a prior art reference to anticipate in terms of 35 USC 102, every element of the claimed invention must be identically shown in a single reference ... These elements must be arranged as in the claim under review *In re Bond*, 15 USPQ2d 1566 (Fed. Cir. 1990)

In this regard, Maes et al. do not disclose "estimating correspondences between one or more pairs of frames *in the watermarked digital image sequence*" as in claim 1. Maes et al. disclose in column 4, lines 42 - 45 that "the comparing means 202 compares the input signal 201 with an original input signal 204 to obtain one or more differences between the *input signal* 201 and the *original input signal* 204." This clearly discloses that Maes et al. require an original input signal, which claim 1 does not require as it only requires the "watermarked digital image sequence." By requiring only the "watermarked digital image sequence," the claimed invention includes a significant advantage over the prior art because the original sequence may not be readily accessible or even available at all. This disadvantage of the prior art is clearly articulated in the specification on page 5, line 14 through page 6, line 7 where it states:

Because image content is highly correlated in neighboring frames of an image sequence, it is possible to estimate the correspondences between frames (using motion estimation methods for example) and compute a displaced frame difference prior to watermark extraction.

It is noted that the goal of reducing the image content prior to watermark extraction could potentially be performed by subtracting the original (i.e. unwatermarked) frames from the corresponding watermarked frames, without the need for estimating correspondences between frames. However, there are several issues that make this approach very difficult to apply in practice. First, it requires the original frames, which may not be

Amendments to the Drawings:

Formal drawings are submitted herewith under Separate Letter to the Draftsperson. For the convenience of the Examiner, a copy of the formal drawings are also attached with this amendment.

available in every application. For example, a consumer device that detects the watermark and then takes some action (such as disabling the device) would not have access to the original frames. It is much more desirable to have a system that does not require the original content (which is known as a "blind" or "oblivious" watermarking method). Second, the image sequence that contains the watermark may have undergone substantial degradations, such as sharpness loss, magnification changes, contrast and brightness changes, etc. The subtraction of the undegraded original frames from the degraded watermarked frames will result in a very incomplete removal of the image content, and in fact, this process could introduce additional content that could interfere with the extraction process. In comparison, the present invention only uses the frames within the watermarked sequence itself, which typically have undergone the same degradations. Finally, the original and watermarked image sequence frames may not have a 1-to-1 correspondence. This can occur when the watermarked sequence has been copied at a different temporal sampling rate, such as when a camcorder (operating at 30 or 60 Hz) is used to capture (illegally) a movie that has been projected in a digital cinema theater (at 24 Hz). In this case, it is necessary to align the frames, which is often done using laborious manual methods. The displaced frame differencing method of the present invention can be performed using automated means, and thus requires no user intervention.

Therefore, it is respectfully submitted that the claimed invention is neither taught nor suggested from the prior art. Consequently, it is respectfully submitted that the rejection be withdrawn.

Still further, in regards to claim 2, the rejection states that Maes et al. disclose "the displaced frame difference is computed by forming an estimated frame (estimating frame are represented as "missing" frames or frames that occur twice at col. 4 lines 46-51) and subtracting the estimated frame from the corresponding frame in the watermarked digital image sequence as discloses[d] at col. 4 lines 42-67." It is respectfully submitted that "estimating" a frame is not taught by determining a "missing" frame as in Maes et al. "Estimating" is defined as "to calculate approximately the extent or amount of." *The American Heritage Dictionary*, 1991 With this in mind, it is respectfully submitted that determining a missing frame does not teach calculating an approximation of a frame.

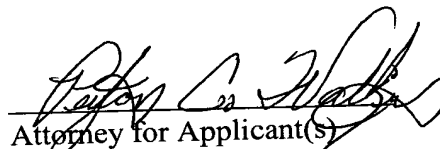
Therefore, it is respectfully submitted that the claimed invention is neither taught nor suggested from the prior art. Consequently, it is respectfully submitted that the rejection be withdrawn.

Claims 10 and 11 are patentable for the reasons stated hereinabove in support of claims 1 and 2 respectively.

Should the Examiner consider that additional amendments are necessary to place the application in condition for allowance, the favor is requested of a telephone call to the undersigned counsel for the purpose of discussing such amendments.

For the reasons set forth above, it is believed that the application is in condition for allowance. Accordingly, reconsideration and favorable action are respectfully solicited.

Respectfully submitted,


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If the Examiner is unable to reach the Applicant(s) Attorney at the telephone number provided, the Examiner is requested to communicate with Eastman Kodak Company Patent Operations at (585) 477-4656.